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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,035	03/30/2004	Alexander A. Maltsev	884.B55US1	7797
21186 7590 05/25/2007 SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER BAYARD, EMMANUEL	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/815,035

Applicant(s)

MALTSEV ET AL.

Examiner

Emmanuel Bayard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 16, 17, 21-27, 36, 37 and 41-46 is/are rejected.
- 7) ☒ Claim(s) 8-15, 18-20, 28-35 and 38-40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 25 recites the limitation "the current packet" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 44-46 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).)

“Nonfunctional descriptive material” includes but is not limited to music, literary works and a compilation or mere arrangement of data.

Both types of “descriptive material” are nonstatutory when claimed as descriptive material per se. Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

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When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored in a computer-readable medium, in a computer, on an electromagnetic carrier signal does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”). Such a result would exalt form over substance. *In re Sarkar*, 588

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F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) (“[E]ach invention must be evaluated as claimed; yet semantogenic considerations preclude a determination based solely on words appearing in the claims. In the final analysis under § 101, the claimed invention, as a whole, must be evaluated for what it is.”) (quoted with approval in *Abele*, 684 F.2d at 907, 214 USPQ at 687). See also *In re Johnson*, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) (“form of the claim is often an exercise in drafting”). Thus, nonstatutory music is not a computer component and it does not become statutory by merely recording it on a compact disk. Protection for this type of work is provided under the copyright law.

When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory and should be rejected under 35 U.S.C. § 101. In addition, the examiner should inquire whether there should be a rejection under 35 U.S.C. § 102 or 103. The examiner should determine whether the claimed nonfunctional descriptive material be given patentable weight. The USPTO must consider all claim limitations when determining patentability of an invention over the prior art. *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983). The USPTO may not disregard claim limitations comprised of printed matter. See *Gulack*, 703 F.2d at 1384, 217 USPQ at 403; see also *Diehr*, 450 U.S. at 191, 209 USPQ at 10. However, the examiner need not give patentable weight to printed matter absent a new and unobvious functional relationship between the printed matter and the substrate. See *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994); *In re Ngai*, 367 F.3d 1336, 70 USPQ2d 1862 (Fed. Cir. 2004).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, 16-17, 21-27, 36-37 and 41-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Subramaniam et al U.S. Pub No 2005/0215264 A1.

As per claims 1, 21 and 44 Subramaniam et al teaches method of selecting a data rate of a multicarrier communication channel, the method comprising: calculating signal to noise ratios (SNRS) for sub carriers of the multicarrier communication channel from channel state information and a transmit power level (see figs.3-4 elements 312, 432 and page 7 [0086] and page 8 [0090]); estimating a throughput for each of a plurality of data rates from the SNRs (see figs.3-4 elements 314, 434 and page 7 [0086] and page 8 [0090]); and selecting one of the data rates based on the estimated throughputs (see figs.3-4 elements 330, 464 and page 7 [0087] and page 8 [0092]).

As per claims 2, 22, and 45, Subramaniam et al teaches wherein selecting one of the data rates comprises selecting a combination of one of a plurality of modulations and

one a plurality of code rates associated with a highest of the estimated throughputs (see page 7 and page 8 [0087-0092]).

As per claims 3, 23 and 46 Subramaniam et al teaches further comprising predicting packet error ratios (PERs) from the SNRs for each of the data rates, and wherein the estimating the throughput comprises estimating a throughput for each of the data rates from the predicted PERs (see page 5 [0071]).

As per claims 4, 24 Subramaniam et al teaches wherein predicting the PERs comprises using SNR performance curves for the plurality of data rates to determine a PER for each data rate, the SNR performance curves being predetermined and look-up table is the same as the claimed (stored in a memory) of a receiving station (see fig.6 and page 5 [0071] and page 9 [0103]).

As per claims 5, 25 Subramaniam et al inherently teaches wherein the predicting PERs comprises: after demapping bits of a current packet, calculating a bit-error rate (BER) (Note that Subramaniam teaches a mapping process at the transmission side therefore the demapping is inherently occurring at the receiving side), based on a modulation of the current packet; and after decoding the bits of the current packet, determining a PER for each of the plurality of data rates based on a predetermined BER performance of a decoder, the calculated BER, and a length of the current packet (see fig.6 and page 9 [0099-0103]).

As per claims 6, 26 Subramaniam et al inherently teaches wherein the estimating the throughput comprises estimating a throughput for each data rate of the plurality by multiplying an associated one of the data rates by one minus the PER predicted for the

associated data rate (see page 5 [0071]).

As per claims 7, 27 Subramaniam et al inherently teaches comprising generating transmit power level and data rate instructions for a transmitting station, the transmit power level and data rate instructions to include the selected modulation and code rate and a selected transmit power level (see figs. 4-5 and page 7-8).

As per claims 16, 36 Subramaniam et al inherently teaches wherein the data rate is further selected based on a mean-variance adaptation that includes a mean channel power gain based on channel gains for each of the sub carriers, a variance of the mean channel power gain, and predicted SNRs for each of the data rates (see page 3 [0035-0038]).

As per claims 17, 37 Subramaniam et al inherently teaches wherein estimating the throughput comprises selecting various data rates for each of the sub carriers of the multicarrier communication channel based on the SNR for the associated subcarrier, and wherein estimating the throughput comprises calculating throughputs for the multicarrier communication channel for the various data rates, wherein selecting comprises selecting a single data rate for the sub carriers of one or more spatial channels and one or more subchannels of the multicarrier communication channel (see figs. 3-4 and 6 and page 7 [0087] and page 8 [0092]).

As per claim 41, Subramaniam et al inherently teaches a system comprising: a substantially omnidirectional antenna (see fig.1 element 124a or 152a); a receiver to receive signals through then antenna through a multicarrier communication channel (see fig.1 element 150); channel state information

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processing circuitry to calculate signal to noise ratios (SNRs) for sub carriers of the multicarrier communication channel from a transmit power level and channel state information (see figs.3-4 elements 312, 432 and page 7 [0086] and page 8 [0090]); and data rate selection circuitry to estimate a throughput for each of a plurality of data rates from the SNRs (see figs.3-4 elements 314, 434 and page 7 [0086] and page 8 [0090]) and select one of the data rates based on the estimated throughputs (see figs.3-4 elements 330, 464 and page 7 [0087] and page 8 [0092]).

As per claim 42, Subramaniam et al inherently teaches wherein the data rate selection circuitry selects one of the data rates from a combination of one of a plurality of modulations and one a plurality of code rates associated with a highest of the estimated throughputs (see page 7 and page 8 [0087-0092]).

As per claim 43, Subramaniam et al inherently teaches wherein the data rate selection circuitry further predicts packet error ratios (PERs) from the SNRs for each of the data rates and estimates the throughput comprises estimating a throughput for each of the data rates from the predicted PERs (see fig.6 and page 5 [0071] and page 9 [0103]).

Allowable Subject Matter

4. Claims 8-15, 18-20, 28-35 and 38-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kadous U.S. Pub No 2005/0088959 A1 teaches a rate selection.

Tzannes U.S. Pub No 2002/0009155 A1 teaches a system and method for a multicarrier.

Kadous et al U.S. Pub No 2005/0245197 A1 teaches a rate control.

Jalali et al U.S. Pub No 2006/0087972 A1 teaches a rate selection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571 272 2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

5/23/2007

Emmanuel Bayard
Primary Examiner~~Art Unit 2611~~
~~EMMANUEL BAYARD~~
~~PRIMARY EXAMINER~~